Software Testing and Validation – 2017/18

Instituto Superior Técnico

Vos – Project Report

Group 01 – Alameda

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1 Method-Scope Tests

1.1 `assignPhoneNumber`

Assigns a free phone number to a client of *Vos* if all conditions are met. If at least one of these conditions does not hold, then this method does not change anything and throws the YES exception.

- **Test Pattern**
  - Category-partition
- **Functions**
  - Primary function
    - Assign free phone number to a client without a number
  - Secondary functions
    - Throw YES if conditions aren't met
      - Invalid nif (nif $\notin [10^8, 10^9 - 1]$)
      - Invalid phone number (number $\notin [10^8, 10^9 - 1]$)
      - Client doesn't exist (valid nif)
      - Assign a previously assigned number to a client
      - Assign a number to a client that already has said number
- **I/O Parameters**
  - Input
    - `clientNif` – The nif of the client to assign a number to
    - `phoneNumber` – The phone number to be assigned
    - `clients` – The set of *Vos* clients managed by `ClientManager`
  - Output
    - `client` – The updated client, if a number was assigned successfully

- **Categories & Choices**

Parameter	Category	Choices
`clientNif`	*Vos* client	$\#numbers = 0$
		$\#numbers \in [1, 5[$
		$\#numbers = 5$ (MAX)
	Special cases	$\texttt{client}_{\texttt{nif}}$[1] $\notin$ `clients`
		`clientNif` $\notin [10^8, 10^9 - 1[$
`phoneNumber`	*Vos* phone number	Free (Unassigned)
		Not free (Assigned)
	Invalid number	`phoneNumber` $\notin [10^8, 10^9 - 1]$
`clients`	n-elements	$n = 0$ (Empty)
		$n \in [1, \text{MAX}]$ (Not empty)

- **Constraints**
  - Empty `clients` list precludes the possibility of assigning a `phoneNumber`

- **Test Cases**

	Choices			**Expected Result**	
#	`clientNif`	`phoneNumber`	`clients`	**Exception**	`client`
1	$\#numbers = 0$	Free	$n \in [1, \text{MAX}]$	NO	$\#numbers = 1$
2	$\#numbers = 0$	Not free	$n \in [1, \text{MAX}]$	YES	—
3	$\#numbers = 0$	$\notin [10^8, 10^9 - 1]$	$n \in [1, \text{MAX}]$	YES	—
4	$\#numbers \in [1, 5[$	Free	$n \in [1, \text{MAX}]$	NO	$\#numbers \in]1, 5]$
5	$\#numbers \in [1, 5[$	Not free	$n \in [1, \text{MAX}]$	YES	—
6	$\#numbers \in [1, 5[$	$\notin [10^8, 10^9 - 1]$	$n \in [1, \text{MAX}]$	YES	—
7	$\#numbers = 5$	Free	$n \in [1, \text{MAX}]$	YES	—
8	$\#numbers = 5$	Not free	$n \in [1, \text{MAX}]$	YES	—
9	$\#numbers = 5$	$\notin [10^8, 10^9 - 1]$	$n \in [1, \text{MAX}]$	YES	—
10	$\texttt{client}_{\texttt{nif}} \notin$ `clients`	Free	$n \in [1, \text{MAX}]$	YES	—
11	$\texttt{client}_{\texttt{nif}} \notin$ `clients`	Not free	$n \in [1, \text{MAX}]$	YES	—
12	$\texttt{client}_{\texttt{nif}} \notin$ `clients`	$\notin [10^8, 10^9 - 1]$	$n \in [1, \text{MAX}]$	YES	—
13	$\notin [10^8, 10^9 - 1]$	Free	$n \in [1, \text{MAX}]$	YES	—
14	$\notin [10^8, 10^9 - 1]$	Not free	$n \in [1, \text{MAX}]$	YES	—
15	$\notin [10^8, 10^9 - 1]$	$\notin [10^8, 10^9 - 1]$	$n \in [1, \text{MAX}]$	YES	—

1.2 `computeBill` method

2 Class-Scope Tests

2.1 `Client` class

2.2 `Mobile` class

[1] A client whose nif is `clientNif`, not `clientNif` itself.